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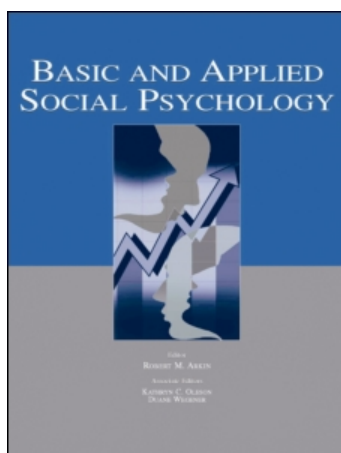
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From Games to Giving: Social Value Orientation Predicts Donations to Noble Causes

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The central purpose of the present research is to examine the ability of social value orientation (i.e., prosocial, individualistic, and competitive orientation), as measured with methods rooted in game theory (i.e., decomposed games), to predict real-life prosocial behavior. Consistent with hypotheses, results revealed that individual differences in social value orientation are predictive of various donations. Relative to individualists and competitors, prosocials reported to engage in a greater number of donations, especially donations to organizations aimed at helping the poor and the ill. Results are discussed in terms of theory and methodology regarding the individual differences in social value orientation, as well as in terms of societal implications for enhancing donations to noble causes.

Throughout the past several decades, issues relevant to prosocial behavior, such as cooperation and competition, have been thoroughly examined using experimental games. This tradition of research, which is theoretically and methodologically rooted in game theory (i.e., Luce & Raiffa, 1957; Von Neumann & Morgenstern, 1944), has contributed enormously to our understanding of the cognitive and motivational underpinnings of cooperation and competition in dyads and small groups. For example, the value of reciprocity and generosity in the evolution of cooperation in dyadic interaction, the benefits of communication and efficacy in small group interaction, and the psychological

differences between interpersonal and intergroup interactions have been illuminated in past research using experimental games (e.g., Komorita & Parks, 1995).

Notwithstanding its important contribution to our understanding of cooperation and competition, the experimental game approach can be characterized by two broad limitations. A first limitation is largely *theoretical* in nature. As a foundation for theory and analysis, the experimental game approach is based on the assumption of *rational self-interest*, arguing that people tend to pursue their personal well-being, with little or no regard for other people's well-being. This assumption is widespread in several sciences, particularly economics and political science (cf. public choice theories, economic man theories; e.g., Olson, 1965; for a review and discussion, see Mansbridge, 1990), but has been reconsidered, complemented, and extended by several psychological or interpersonal approaches to cooperation and

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competition. A case in point is interdependence theory, which explicitly assumes that social interaction needs to be understood in terms of not only concern with own outcomes (i.e., self-interest), but also broader social or interpersonal concerns, such as concern with joint outcomes, concern with partner's outcomes, and concern with equality in outcomes (e.g., Kelley & Thibaut, 1978; Rusbult & Van Lange, 2003; Van Lange, De Cremer, Van Dijk, & Van Vugt, 2007).

A second limitation is largely *methodological* in nature. Experimental games are "strongly controlled" situations that do not tend to capture a psychological richness that is assumed to be present in real-life situations. This lack of mundane realism has been acknowledged and recognized for a long time, and several theorists and researchers have suggested the importance of bridging the gap between "games" and more "mundane" or everyday forms of interpersonal behaviors. For example, after reviewing thirty years of research on experimental games, Pruitt and Kimmel (1977) underlined the need and importance of studies which "take us well beyond the gaming laboratory" allowing us "to assess how far each research finding can be pushed in explaining other social behavior" (p. 387). Similar or even stronger recommendations have been advanced in more recent reviews (e.g., Allison, Beggan, & Midgley, 1996; Komorita & Parks, 1995; Van Vugt, Snyder, Tyler, & Biel, 2000). Despite these recommendations, the empirical literature on the ecological validity of experimental games, or specific tools rooted in this long tradition of research, is remarkably small.

The current research seeks to examine the ability of individual differences in *social value orientation*, assessed with experimental games, to predict various everyday life forms of prosocial behavior. Specifically, we seek to illuminate the ability of social value orientation to predict various donations. Theoretically, the concept of social value orientation extends the "rational self-interest" postulate by assuming that individuals systematically differ in their interpersonal preferences, with some seeking to enhance joint outcomes and equality in outcomes (prosocial orientation), and others seeking to enhance their own outcomes in absolute terms (individualistic orientation) or comparative terms (competitive orientation). Methodologically, the concept of social value orientation is rooted in the experimental game approach, assessing individuals' preferences by a series of allocation tasks, or more precisely, a series of decomposed games, which represent outcomes for self and outcomes for another (cf. Messick & McClintock, 1968; Pruitt, 1967). As such, the present research extends past research on prosocial attitudes and dispositions that used instruments not rooted in game theory, and that examined forms of prosocial behavior other than donations, such as citizenship behavior in

organizations (e.g., Rioux & Penner, 2001) and volunteerism (e.g., Penner & Finkelstein, 1998; see also Eisenberg, Guthrie, Cumberland, Murphy, Shepard, Zhou, & Carlo, 2002).

Beyond Self-Interest

Theoretically, the concept of social value orientation is embedded in interdependence theory (Kelley & Thibaut, 1978; for a recent review, see Van Lange et al., 2007), which places particular emphasis on transformations from so-called given matrices to effective matrices. The given matrix represents the immediate, hedonistic outcomes that can be obtained in a given matrix or given situation (e.g., whether one prefers going to movie X or Y), whereas the effective matrix represents *broader interaction goals*, such as a strong concern with other's outcomes, or an attempt at attaining cooperative interaction from which one benefits now and in the future. Of particular relevance to social value orientations is the concept of outcome transformation, which emphasizes the idea that individuals evaluate actions not only in terms of the quality of one's own outcomes but also in terms of the quality of another person's outcomes.

Prosocial orientation is defined in terms of enhancing own and other's outcomes (i.e., maximizing joint outcomes, MaxJoint) as well as equality in outcomes (i.e., minimizing absolute differences in outcomes for self and another person, MinDiff); individualistic orientation is defined in terms of enhancing outcomes for self, and being largely indifferent to outcomes for another person (MaxOwn), and competitive orientation is defined in terms of enhancing the difference between outcomes for self and other in favor of themselves (i.e., maximizing relative outcomes, MaxRel; Kelley & Thibaut, 1978). A complementary conceptualization of social value orientation focuses on the similarities and differences among the three basic orientations, noting that (a) all three orientations seek to enhance outcomes for self (similarity), (b) unlike individualism and competition, prosocial orientation seeks to enhance both outcomes for another person (as part of enhancing joint outcomes) and equality in outcomes (i.e., a prosocial versus proself difference), and (c) unlike prosocials and individualists, competitors seek to minimize outcomes for another person as part of enhancing relative advantage over another's outcomes (see Knight & Dubro, 1984; Van Lange, 1999).

The concept of social value orientation is rooted in classic research on cooperation and competition, which revealed (largely unexpected, as noted by McClintock, 1972) a good deal of within-individual consistency in behavior over a series of interactions and across situations. These considerations, as well as the aim of

disentangling (or decomposing) interpersonal goals underlying behavior in experimental games, have inspired researchers to design a measure that is closely linked to game behavior (Messick & McClintock, 1986; Pruitt, 1967). Rather than focusing on a 2 by 2 matrix game, such as the Prisoner's Dilemma Game, the instrument represents "decompositions" of game situations, capturing consequences of one's behavior for oneself and another person. A frequently-used instrument is the Triple-Dominance Measure of Social Values (Van Lange, Otten, De Bruin, & Joireman, 1997; see also earlier research by Messick & McClintock, 1968; Kuhlman & Marshello, 1975). In this instrument (see Appendix 1), outcomes are presented in terms of points said to be valuable to self and the other, and the other person is described as someone they do not know and that they will never knowingly meet in the future (in an effort to exclude the role of considerations relevant to the future interactions).

An example of a decomposed game is the choice among three options:

- (1) *Option A*: 480 points for self and 80 points for other;
- (2) *Option B*: 540 points for self and 280 points for other; and
- (3) *Option C*: 480 points for self and 480 points for other.

In this example, Option A represents the competitive choice, because it yields the greatest outcomes for self relative to the other ($480 - 80 = 400$ points); Option B represents the individualistic choice, because it yields the greatest absolute outcomes for self (540 points), and Option C represents the prosocial choice because it yields the greatest joint outcomes ($480 + 480 = 960$) as well as the smallest absolute difference between outcomes for self and other ($480 - 480 = 0$ points). In research using this instrument, most individuals are classified as prosocial (about 60–65%), followed by individualists (about 25%), and only a small minority is classified as competitive (about 10–15%). Of course, these percentages might differ as a function of the sample, depending on variables such as (sub)cultural differences (e.g., Madsen & Lancy, 1981; Parks & Vu, 1994), gender, number of siblings, and age (Van Lange et al., 1997).

Consistent with earlier modeling and theorizing (Messick & McClintock, 1968; McClintock, 1972), research revealed that social value orientation exhibited considerable ability to predict actual behavior in a variety of different experiment games, with prosocials exhibiting greater cooperation than individualists and competitors (e.g., McClintock & Liebrand, 1988). Moreover, social value orientations often exert their influence

not only in terms of statistical main effects, but also in interaction with a number of variables, such as personality impressions of the partner, the behavioral strategy pursued by the interaction partner, and the features of the interdependence structure of the social dilemma (e.g., Kelley & Stahelski, 1970; Kuhlman & Marshello, 1975; Sattler & Kerr, 1991). Finally, within the realm of experimental games, social value orientation is associated with a number of cognitive processes, including the use of morality (good versus bad) versus competence (intelligent versus stupid, weak versus strong) in person judgment and impression formation (De Bruin & Van Lange, 2000; Liebrand, Jansen, Rijken, & Suhre, 1986), the priming of such constructs (e.g., Smeesters, Warlop, Van Avermaet, Corneille, & Yzerbyt, 2003), the use and recall of prosocial versus self-serving heuristics in negotiation (De Dreu & Boles, 1998), the strategic use of fairness in bargaining (Van Dijk, De Cremer, & Handgraaf, 2004), response latencies for making decisions in experimental games (Dehue, McClintock, & Liebrand, 1993), and evaluations of structural solutions to social dilemmas (e.g., Samuelson, 1993).

Beyond Experimental Games

Is there evidence in support of the predictive ability of social value orientation regarding behavior in situations other than experimental games or social dilemmas tasks administered in the laboratory? Research by Bem and Lord (1979) has revealed that prosocials, individualists, and competitors were described differently by their friends and roommates—for example, prosocials tended to be viewed as relatively more moralistic, fastidious, and concerned with philosophical problems. Moreover, there is research on judgments of commuting situations, revealing that prosocials tend to construe such situations in terms of collective welfare (environmental consequences; e.g., how much does the car versus train pollute the environment?) whereas individualists and competitors tend to construe such situations in terms of personal welfare (e.g., travel time e.g., Joireman, Van Lange, Kuhlman, Shelley, & Van Vugt, 1997; Van Vugt, Meertens, Van Lange, 1995). Also, in the context of organizations, prosocials indicate a stronger concern with the goals of other departments than do individualists and competitors (Nauta, De Dreu, & Van der Vaart, 2002). Thus, there is evidence suggesting that social value orientation is associated with *judgments* of specific situations with which they are faced outside of the laboratory. Also, there is only one study that has directly examined the predictive ability of social value orientation regarding *prosocial behavior*. McClintock and Allison (1989) classified a large number of students in terms of their social value orientation, and mailed them

a request to volunteer zero to ten hours of their time to serve as a participant in research at the University of California Santa Barbara (i.e., students were told that such participation in experiments is important to maintaining the university's standard of excellence in research). Although social value orientation was not predictive of whether or not they returned their responses forms, it did appear that prosocials donated significantly more hours than did individualists or competitors. Thus, the extant literature on the predictive ability of social value orientation regarding everyday forms of prosocial behavior is rather limited.

The present study examines the associations of social value orientation with (a) specific donation acts (e.g., transferring money on a bank account, buying lottery tickets) that they had enacted in the past year, and with (b) global donation goals, which were assessed by asking to which organizations they had made a donation in the past year. The examination of the specific donation acts illuminates the specific ways in which people may donate, whereas the examination of the global donation goals illuminate the social motivation underlying donations—for example, individuals are likely to benefit from donations to organizations that support the local sports club, but are unlikely to benefit (at least in a tangible manner) from donations to organizations that support third world countries. We hypothesized that prosocials would engage in a greater number of donation acts than individualists and competitors. And in a more exploratory vein, we examined whether the predicted link between social value orientation and donations may to some degree depend on the primary goals of the organizations to which these donations are made.

METHOD

Participants

A total of 991 individuals participated in this study. This sample constitutes individuals who have agreed to participate once every week in surveys and research conducted by NIPO (the Netherlands Institute for the assessment of Public Opinion), an organization of computerized survey research. In exchange, each participant receives a personal computer that is also being employed for surveys and research. This personal computer is connected with the main computer at NIPO where the data are stored automatically. The sample consisted of more men (76%) than women (24%), included participants from differing age categories: 34 years or younger (22.0%), 35 through 54 years (43.4%), and 55 years and older (34.6%), with 28.0% having an annual income less than 28,000 guilders (about 14,000 US dollars) and

9.9% higher than 99,000 guilders (about 49,500 US dollars) at the time the study was conducted, and 47% had followed and completed an education that is considered to be mid-level or higher education in the Netherlands.¹

Procedure

The questionnaire, administered via a computer, consisted of a series of nine decomposed games. However, given that the sample includes individuals with less education than university students, we wanted to assess whether participants were able to make a decision in the decomposed games. Hence, in addition to prosocial, individualistic, and competitive choices, we included the option "I do not know." It appeared that 40 participants (4%) indicated lack of comprehension or decision difficulty by choosing the "I do not know" category in at least one of the decomposed games. As in previous research, participants were categorized as prosocial, individualistic, or competitive if they made six or more choices that were consistent with that orientation (see McClintock & Allison, 1989; Van Lange et al., 1997). According to these criteria, we identified 588 prosocials (70%), 172 individualists (20%), and 81 competitors (10%). One hundred and fifty participants could not be reliably classified because they made fewer than six consistent choices.

Donation questionnaire. The questionnaire included 12 questions focusing on specific donation acts, asking participants whether they engaged in a particular act of donation in the past year ("yes" versus "no"). We generated a wide variety of different donation acts, including the variety of places where individuals may donate (e.g., in a church, at a market or fancy fair, in a shop), as well as the specific acts by which they donate (e.g., supporting a race, buying lottery tickets, donation of used clothes to charity). These twelve donation acts capture a great variety of ways in which people in the Netherlands make donations.

The questionnaire included eight categories of organizations to which individuals may make financial donations. These organizations, which are indicative of broad *donation goals*, are (a) third world organizations, (b) charity organizations, (c) health organizations, (d) environmental organizations (including protection of animals), (e) church or related organizations, (f) sports/recreation organizations, (g) organizations for the advancement of education and research, and (h) organizations

¹Women were underrepresented because the sample used by NIPO consisted of many couples. We wished to avoid that both partners would participate (i.e., to obtain "independent" responses) and therefore asked one of them to complete the survey. It appeared that among these couples much more men than women decided to participate.

for the advancement of art and culture. These eight donations are based on national surveys conducted in the USA (“*Giving USA*”) and Great Britain (“*Individual Giving and Volunteering in Britain*”), which have been extended to the Netherlands (i.e., “*Giving in the Netherlands*”; described in Schuyt, 1997). Participants were asked whether they had donated to each of the eight organizations in the past year (e.g., Did you donate in the past year money to “third world organizations,” “health organizations,” and so on).

RESULTS

Donation Acts

To test the hypothesis that prosocials would be more likely to donate in a variety of ways than individualists and competitors, we computed the number of donation acts (out of twelve donation acts) individuals engaged in during the past year. A one-way analysis of variance with planned comparisons for the three social value orientations, revealed a significant contrast of prosocials versus individualists and competitors, $F(1, 838) = 30.17$, $p < .001$, $d = .38$; the contrast of individualists and competitors was not significant, $F(1, 838) = 0.23$, ns . In support of the present hypothesis, prosocials,

$M = 6.11$, $SD = 2.64$, engaged in a greater number of donations than did individualists, $M = 4.95$, $SD = 2.70$, or competitors, $M = 5.12$, $SD = 2.68$.

Next, we examined the association between social value orientation and each donation act. As can be seen in Table 1, prosocials were more likely than either individualists or competitors to engage in acts such as “donating used clothes in clothes containers” (item #3), “being a registered contributor” (item #5), and “buying something in a third world shop or environment shop” (item #12). These effects were accompanied with only “reasonable” effect sizes, given that each specific donation act should be determined by a host of variables (such as whether encounter these opportunities, social norms, age) along with random error (i.e., such random error is less strong for the mean number of donation acts, as it more strongly averages out random error). At the same time, associations of social value orientation and donation were not especially strong when donations were linked to religion or church (items #6 and #8), and absent for donating on the street (item #7). While consistent with our hypothesis, many or most of these donation acts represent not only a specific means for making a contribution, but also a particular goal that one seeks to pursue. For example, donating used clothes presumably contributes to the well-being of poor people. In the next analysis, we

TABLE 1
Percentages of Specific Donations Among Prosocials, Individualists, and Competitors

	Social Value Orientation				Chi(2) (N = 841)	Effect Size (Phi)
	Prosocials	Individualists	Competitors	Total		
Did you donate in the past year money or goods through:						
1. a solicitation at home	91.5 _b	82.6 _a	88.9 _{ab}	89.4	11.26**	.11
2. buying lottery tickets for a good cause	72.3 _b	67.4 _b	55.6 _a	69.7	9.94**	.11
3. alternative means of giving (e.g. donating used clothes in clothes containers)	63.9 _b	49.4 _a	49.4 _a	59.6	15.52***	.14
4. financially supporting someone in his/her actions for a good cause (e.g., a race)	56.1 _b	43.0 _a	48.1 _{ab}	52.7	9.90**	.11
5. being a registered contributor (e.g., foster parents) involving periodic donation of money via a bank or other financial institution	52.6 _b	37.8 _a	38.3 _a	48.2	15.12***	.13
6. a collection in a church	47.1 _a	39.5 _a	53.1 _a	46.1	4.81 ⁺	.07
7. a collection on the street	42.5 _a	40.1 _a	37.0 _a	41.5	1.05	.08
8. a regular contribution to church, mosque, or humanistic organization	41.7 _b	33.1 _a	42.0 _{ab}	40.0	4.19	.07
9. buying something for a good cause (e.g., at the door or through a friend or acquaintance)	37.6 _b	28.5 _a	29.6 _{ab}	35.0	5.96*	.08
10. a personal letter along with a bank transcript	36.1 _b	27.9 _a	22.2 _a	33.1	8.75*	.10
11. buying something at a charity event (“fancy fair” or flea market)	34.9 _a	25.6 _a	24.7 _a	32.0	7.46*	.09
12. buying something in a “third world shop” or “environment shop”	34.4 _b	20.3 _a	23.5 _a	30.4	14.39***	.13

Note: Donations are listed in decreasing order of prevalence. The data of five participants were discarded due to missing values. Percentages with different subscripts per column differ significantly from each other in a pairwise comparison with $df = 1$. In these comparisons, we computed tests of different frequencies regarding any of the three pairs of social value orientation (prosocials vs. individualists; prosocials vs. competitors; individualists vs. competitors) in their “yes or no” responses to specific donation acts in the past year.

⁺ $p < .10$, marginal; * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 2
Percentages of Donations to Different Organizations For Prosocials, Individualists, and Competitors

	Social Value Orientation					
	Prosocials	Individualists	Competitors	Total	Chi(2) (N = 823)	Effect Size (Phi)
Did you donate in the past year money to:						
1. Health organizations	72.5 _b	69.7 _b	57.1 _a	70.5	7.73*	.10
2. Environmental organizations	58.9 _b	54.5 _{ab}	45.5 _a	56.7	5.39 ⁺	.08
3. Third world organizations	52.3 _c	41.8 _b	20.8 _a	47.3	29.60***	.19
4. Church or related organizations	47.2 _b	38.8 _a	42.9 _{ab}	45.1	3.81	.07
5. Charity and societal organizations	46.6 _b	38.8 _{ab}	32.5 _a	43.7	7.61*	.09
6. Sport/recreation organizations	33.4 _a	27.3 _a	26.0 _a	31.5	3.42	.06
7. Education/research organizations	14.6 _b	18.2 _a	11.7 _a	15.1	2.02	.05
8. Art/culture organizations	11.5 _b	13.9 _b	2.6 _a	11.2	7.05*	.09

Note: Donations are listed in decreasing order of prevalence. The data of 23 participants were discarded due to missing values. Percentages with different subscripts per column differ significantly from each other in a pairwise comparison with $df = 1$. In these comparisons, we computed tests of different frequencies regarding any of the three pairs of social value orientation (prosocials vs. individualists; prosocials vs. competitors; individualists vs. competitors) in their “yes or no” responses to each of the “donation goals” in the past year.

⁺ $p < .10$, marginal; * $p < .05$; ** $p < .01$; *** $p < .001$.

examine donation goals with no reference to the specific means that individuals use to make a donation.

Donation Goals

To test the hypothesis whether prosocials would pursue a greater variety of donation goals (i.e., donating to a greater number of organizations) than individualists and competitors, we computed the number of donation goals (out of eight donations in total) individuals engaged in during the past year. A one-way analysis of variance with planned comparisons revealed a significant contrast of prosocials versus individualists and competitors, $F(1, 820) = 14.06$, $p < .001$, $d = .26$, as well as a significant contrast of individualists and competitors, $F(1, 820) = 6.00$, $p < .05$, $d = .17$. Consistent with our hypothesis, prosocials, $M = 3.37$, $SD = 1.85$, pursued a greater number of donation goals than did individualists, $M = 3.03$, $SD = 2.13$, or competitors, $M = 2.39$, $SD = 1.71$. The significance of the second contrast reveals that individualists tended to pursue a greater number of donation goals than did competitors.

The associations among social value orientation and eight different donations are presented in Table 2 (the fifth column reports the Chi^2 s as well as their levels of significance by asterisks, and effect sizes). Four of eight associations were significant, and one association was marginal (i.e., donations to environmental organizations). Interestingly, there was a fairly linear decrease in the percentages among prosocials, individualists, and competitors for donations regarding international support (item #3) and societal and charity goals (item #5). One might assume that these two types of donations are most strongly linked to helping others who need such help. And it is unlikely that individuals who

donate to such causes anticipate any tangible outcomes for themselves by doing so. In contrast, it is possible for contributors to benefit (at least in the long run) from donations to “church or related organizations” (item #4), “education and research” (item #6), “sport and recreation” (item #8), or “art and culture” (item #7), and the three former causes did not yield significant associations with social value orientation.²

DISCUSSION

The present findings provide good support for the general claim that, relative to individualists and competitors, prosocials engage in a greater variety of donation acts, and pursue a greater number of donation goals. Individual differences in social value orientation appear to be especially predictive of donations to organizations aimed at helping others who are strongly dependent on such help—people who are poor and people who are ill.

²We also examined the associations of level of education and age with the number of donation acts and number of donation goals. Consistent with previous research (e.g., Midlarsky, 1991; see also Dovidio et al., 2006), we found that level of education and age were positively associated with the number of donation acts, as well as with the number of donation goals. Also, we found that relative to women, men exhibited a greater number of donation acts and donation goals. However, after testing the effects of these variables, regression analyses revealed that the contrast of prosocial versus individualists and competitors remained significant, for number donation acts and number of donation goals (both $ps < .001$). Given its theoretical and empirical significance, we also explored interaction effects of social value orientation and age in their associations with specific donation acts and donation goals. Out of a total of 20 tests (for 12 donations acts and 8 donation goals), none appeared to be significant (with $p < .05$). These analyses support the relatively independent role of social value orientation in predicting number of donation acts and number of donation goals.

These findings have important theoretical and methodological implications for the construct of social value orientation, several of which we discuss below.

To begin with, past research on social value orientations has tended to focus on (a) experimental games, to study (b) cognition, behavior, and interactions in dyads, and to a lesser extent, small groups. In fact, it is noteworthy that the assessment of social value orientation focuses on allocation of outcomes between the self and another person (rather than other persons, or a group of other persons). As such, the present research complements the broad literature on social value orientation in three important respects. First, it supports the predictive ability of social value orientation in situations, which are substantially different from experimental social dilemmas and related "game situations." Second, it supports its predictive ability in situations involving millions of people that are not part of one's own group—contexts in which, for example, direct reciprocity do not really matter. Third, by examining the link between social value orientation and prosocial behavior, the present research also contributes to our understanding of the broad motivations that may underlie prosocial behavior. As noted earlier, the primary differences between prosocials versus individualists and competitors focus on two complementary goals: enhancing another person's outcomes and enhancing equality in outcomes (see Knight & Dubro, 1984; Van Lange, 1999). Hence, we suggest that the observed differences in the various forms of prosocial behavior could, in principle, be distally explained by these two broad goals. Prosocials may be more likely to donate in an attempt to enhance the well-being of the poor and the sick because they are concerned not only with helping others, but also with seeking fairness by making a contribution to improving the outcomes for those who are less well off (e.g., the poor and the ill).

Given that experimental games have been criticized for lacking mundane realism (i.e., using a methodology focusing on "points" and "hypothetical others"), it becomes important to ask why such measurement is able to predict prosocial behavior in the real world. We suggest two interrelated benefits. One benefit may be that the decomposed game approach follows the logic of "forced-choice" methodology, in which the prosocial, individualistic, and competitive options are pitted against each other. Such *choice*-related measures (see Pruitt & Kimmel, 1977) measures may provide a useful complement to measures focusing on language and self-ratings, because frequently prosocial behavior in the real world is about making *choices* (e.g., whether to help others versus save time for oneself, whether to donate money or save money for oneself). A second benefit may glean from the fact that the experimental game methodology does not rely very strongly on language,

in that it focuses on allocation of points. We regard this to be especially important in the domain of prosocial (and selfish) behavior, because self-evaluations regarding such issues tend to be sensitive to social desirability in responding. That is, alternative measurement techniques that rely more strongly on language (e.g., an item asking "do you consider yourself selfish?") may be more sensitive to social desirability, because of the strong evaluative connotations of concepts such as selfishness, cooperation, and competition. The fact that the assessment of social value orientation takes only a couple of minutes, is unrelated to instruments assessing tendencies to socially desirable responding (see Van Lange, Agnew et al., 1997), and can be fruitfully used in samples other than convenience samples underscores the notion that games are "easy to employ and economical" (Pruitt & Kimmel, 1977, p. 366) and hence of great practical utility for a variety of scientific and societal purposes.

From a societal perspective, we wish to underline the importance of donations, as the world's well-being continues to be strongly dependent on the generosity of individuals, organizations, states and nations. As such, it was interesting to see that social value orientation was strongly associated with donations to "third world organizations," with 52% of prosocials, 42% of individualists, and 21% of competitors having donated in the past year. Hence, it is surprising that differences in social value orientation have received virtually no empirical attention in research on very "noble" forms of prosocial behavior, which are unlikely to be accounted for by mechanisms underlying long-term self-interest—which in fact *have* received a lot of attention in past research. Also, from a societal perspective, the present findings raise the possibility that donations may be enhanced not only by interventions emphasizing empathy (e.g., to enhance concern for other's well-being) but also by interventions emphasizing fairness (e.g., to enhance equality in outcomes).

Before closing, we wish to comment on two limitations of the present research. First, the present research relied on self-report methodology. Even though social value orientation has demonstrated to be independent of instruments assessing tendencies to social desirability, and even though the measurement of social value orientation and donation was separated by several unrelated questionnaires (included by other researchers), we cannot exclude the (remote) possibility that such tendencies have affected the present findings. Second, although the present research may illuminate the broad motivations that could underlie various forms of prosocial behavior, we provided very little insight into the more specific proximal mechanisms underlying the observed differences between prosocials versus individualists and competitors. For example, relative to individualists and

competitors, prosocials may have a stronger need to feel good about themselves, a stronger sense of moral obligation, derive greater esteem, pride, or respect from prosocial behaviors, have a stronger desire to uphold a moral principle, or may be more aversive to interpersonal conflicts, friction, and hostility, more likely to empathize with others' distress, suffering, and pain, or any combination of these (e.g., Batson, 1998; Penner, Dovidio, Piliavin, & Schroeder, 2005; Dovidio, Piliavin, Schroeder, & Penner, 2006).

CONCLUDING REMARKS

Game theory has provided a powerful logic and analysis that has bridged several scientific disciplines in their pursuit of understanding cooperation and conflict resolution among individuals, groups, and nations (see Van Lange, 2006). Although game theory was designed in part to understand major societal issues such as international conflict, virtually no attempt has been made to test the utility of experimental games—the tool provided by game theory—to predict behavior or outcomes that are of direct societal interest. The present research helps to bridge the gap between (game) theory and practice by indicating that tools rooted in game theory (i.e., decomposed games) are efficient and effective at predicting behaviors that help improve the conditions of those people who need it the most.

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APPENDIX

An Instrument to Measure Social Value Orientation

In this task we ask you to imagine that you have been randomly paired with another person, whom we will refer to simply as the “Other.” This other person is someone you do not know and that you will not knowingly meet in the future. Both you and the “Other” person will be making choices by circling either the letter A, B, or C. Your own choices will produce points for both yourself and the “Other” person. Likewise, the other’s choice will produce points for him/her and for you. Every point has value: the more points you receive, the better for you, and the more points the “Other” receives, the better for him/her.

Here’s an example of how this task works:

	A	B	C
You get	500	500	550
Other gets	100	500	300

In this example, if you choose A you would receive 500 points and the other would receive 100 points; if you chose B, you would receive 500 points and the other 500; and if you chose C, you would receive 550 points and the other 300. So, you see that your choice influences both the number of points you receive and the number of points the other receives. Before you begin making choices, please keep in mind that there are no right or wrong answers—choose the option that you, for whatever reason, prefer most. Also, remember that the points have value: the more of them you accumulate the better for you. Likewise, from the “other’s” point of view, the more points s/he accumulates, the better for him/her.

For each of the nine choice situations, circle A, B, or C, depending on which column you prefer most:

	<i>A</i>	<i>B</i>	<i>C</i>		<i>A</i>	<i>B</i>	<i>C</i>
(1) You get	480	540	480	(6) You get	500	500	570
Other gets	80	280	480	Other gets	500	100	300
(2) You get	560	500	500	(7) You get	510	560	510
Other gets	300	500	100	Other gets	510	300	110
(3) You get	520	520	580	(8) You get	550	500	500
Other gets	520	120	320	Other gets	300	100	500
(4) You get	500	560	490	(9) You get	480	490	540
Other gets	100	300	490	Other gets	100	490	300
(5) You get	560	500	490				
Other gets	300	500	90				

Note: Participants are classified when they make 6 or more consistent choices. Prosocial choices are: 1c 2b 3a 4c 5b 6a 7a 8c 9b; individualistic choices are: 1b 2a 3c 4b 5a 6c 7b 8a 9c; and competitive choices are: 1a 2c 3b 4a 5c 6b 7c 8b 9a.